

WHAT IS CLAIMED IS:

1. A solid oxide fuel cell generator comprising: a portable enclosure;
a solid oxide fuel cell stack within the enclosure;
a hydrogen storage means within the enclosure;
a hydrogen supply means at least partially within the enclosure, whereby hydrogen is supplied to the fuel cell stack;
an oxygen supply means at least partially within the enclosure, whereby oxygen is supplied to the fuel cell stack;
a power condition means; and,
at least one system controller.
2. The fuel cell generator of claim 1 wherein the hydrogen storage means comprises:
at least one feed line where into hydrogen can flow;
at least one compressor means connected to the at least one feed line;
one or more hydrogen storage tanks connected to the at least one feed line downstream from the at least one compressor means;
at least one control valve connected to the at least one feed line; and,
the at least one system controller controls at least one of the at least one control valve and the at least one compressor means, whereby the flow of hydrogen is affected.
3. A solid oxide fuel cell generator comprising:
a portable enclosure;
a solid oxide fuel cell stack within the enclosure;
a hydrogen carbon fuel supply within the enclosure;
a prereformer within the trailer;

an oxygen supply means at least partially within the enclosure, whereby oxygen is supplied to the fuel cell stack;

a power condition means; and

at least one system controller.

4. The fuel cell generator of claim 2 wherein each compressor means comprises an oil-cooled intensifier.

5. The fuel cell generator of claim 2 wherein the oxygen supply means comprises:

at least one air inlet line; and,

at least one air compressor connected at one end to the at least one air inlet line and at the other end to the fuel cell stack.

6. The fuel cell generator of claim 1 wherein the power conditioning means comprises at least one inverter with controller whereby the DC of the fuel cell stack is converted to AC.

7. The fuel cell generator of claim 1 wherein the power conditioning means comprises at least one DC converter with controller whereby the voltage of the DC output of the fuel cell stack is stepped down.

8. The fuel cell generator of claim 1 wherein the power conditioning means comprises:

at least one DC converter with controller whereby the voltage of the DC output of the fuel cell stack can be stepped down; and,

at least one inverter with controller whereby DC output of the fuel cell stack can be converted to AC.

9. The fuel cell generator of claim 8 wherein the system controller also controls at least one of the inverter controller, the DC converter controller, and the air compressor.

10. The fuel cell generator of claim 1 further comprising a trailer onto which the portable enclosure is mounted.

11. The fuel cell generator of claim 1 further comprising a trailer onto which the portable enclosure is removably mounted.

12. The fuel cell generator of claim 11 wherein the portable enclosure further comprises a moving means.

13. The fuel cell generator of claim 12 wherein the moving means is at least one axle; with at least one wheel at each end; affixed to the enclosure.

14. The fuel cell generator of claim 12 wherein the moving means is a sled.

15. A transportable solid oxide fuel cell generator comprising a trailer;

an enclosure on the trailer;

a solid oxide fuel cell stack within the enclosure;

a hydrogen storage means within the enclosure;

a hydrogen supply means at least partially within the enclosure, whereby hydrogen is supplied to the fuel cell stack;

an oxygen supply means at least partially within the enclosure, whereby oxygen is supplied to the fuel cell stack;

a power conditioning means; and,

at least one system controller.

16. The transportable solid oxide fuel cell generator of claim 15 wherein the hydrogen storage means comprises:

at least one feed line where into hydrogen can flow;

at least one compressor means connected to the at least one feed line;

one or more hydrogen storage tanks connected to the at least one feed line downstream from the at least one compressor means;

at least one control valve connected to the at least one feed line; and

system controller controls at least one of the at least one control valve and the at least one compressor means, whereby the flow of hydrogen is affected.

17. The transportable solid oxide fuel cell generator of claim 16 wherein the oxygen supply means comprises:

at least one air inlet line; and,
at least one air compressor connected at one end to the at least one air inlet line and at the other end to the fuel cell stack.

18. The transportable fuel cell generator of claim 15 wherein the power conditioning means comprises at least one inverter with controller whereby the DC of the fuel cell stack is converted to AC.

19. The transportable solid oxide fuel cell generator of claim 15 wherein the power conditioning means comprises at least one DC converter with controller whereby the voltage of the DC output of the fuel cell stack is stepped down.

20. The transportable solid oxide fuel cell generator of claim 15 wherein the power conditioning means comprises:

at least one DC converter with controller whereby the voltage of the DC output of the fuel cell stack can be stepped down; and,
at least one inverter with controller whereby DC output of the fuel cell stack can be converted to AC.

21. The transportable solid oxide fuel cell generator of claim 20 wherein the system controller also controllers at least one of the inverter controller, the DC converter controller, and the air compressor.

22. A method of providing fuel cell generated electrical power the method comprising:

transporting an enclosure, on a trailer, containing a solid oxide fuel cell stack, balance of plant hydrogen supply means, oxygen supply means, power conditioner and system controller to a location;
generating electricity by providing fuel to the solid oxide fuel cell stack; and
providing a connection to the electricity generated by the solid oxide fuel cell stack.

23. The method of claim 22 further comprising disassociating the enclosure from the trailer before generating the electricity.

24. The method of claim 22 the method further comprising conditioning the electricity generated from the fuel cell stack before providing a connection to the electricity.

25. The method of claim 22 when the fuel supplied is hydrocarbon reformat and oxygen from compressed atmospheric air.